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Community Health

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The Regional Chairman's Task Force on

Sustainable Development

by

The Regional Municipality of Hamilton-Wentworth
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1.0 Population Health / Community Health

To speak of "population health" is to attempt to understand, measure and value the health status, problems and needs of groups of individuals. We may speak of "communities" - groupings of people who share common affinities or concerns, linked by geography, culture, or economics - or of "populations" - subsets of humankind, sharing some linking characteristic, such as age (eg. the elderly, adolescents), socioeconomic status (eg. the poor), health status (eg. pregnant women, people with substance abuse problems) or culture (eg. new immigrants).

When we consider the health of communities, there is a natural tendency to think of the formal health care system, principally doctors, nurses and hospitals. There are historical reasons for doing so. Post-war Canadian health care policy developed a health care system characterized by a large and powerful institutional sector, an elite, almost monopolistic medical profession, and the provision of government-sponsored health care insurance to principally cover medical services provided by hospitals and doctors. As Evans and Stoddard note in their 1990 paper this conforms to a simplistic model of the relationship between ill-health and the provision of health care services, with "health" being defined as the absence of illness or disability as determined by health professionals.

The past four decades have seen a number of conceptual developments in understanding the nature of health, from the World Health Organization's definition of health as a state of complete physical, mental and social well-being, to the definition outlined in the 1986 Ottawa Charter for Health Promotion:

> "To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. Health is seen therefore as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources as well as physical capacities".

As the conceptual changes have occurred, greater emphasis has been placed on a broader range of factors which augment or detract from the health status of communities. Lalonde (1974) defined four fundamental and interlocking domains: biology (genetic endowment), lifestyle, environment and health care organization. Ensuing focus on lifestyle choices and then modifications has led to greater understanding of the role and limits of individual choice within broader social, economic and cultural contexts. Factors such as nutrition, physical activity, tobacco and alcohol use, and seatbelt use are important in determining health status at both the individual and community levels. However, not all are equally capable of making personal decisions as to a healthy diet or assessing the risks and benefits of smoking. In addition, social, physical and economic environments are being recognized as important determinants of health status.

Changing definitions of health, and changes in our understanding of the determinants of health, have led to attempts to measure and place values on the community's health status. Traditionally, a number of indices have been used to describe a community's health: life expectancy, birth and death rates, fertility, maternal and infant mortality rates, ratios between doctors, nurses, hospital beds and population, etc. The growing concern for the quality, not just the quantity, of life has resulted in a variety of measures being developed: self-rated indices of health, estimates of years of life free from disability, estimates of the prevalence of physical and mental or emotional illness or dysfunction, disease-specific quality-of-life measures, the incorporation of utility theory into economic

evaluations of health care interventions (quality-adjusted life years), etc. Lifestyle determinants have led to the regular surveying of numerous features/risk factors at the level of the individual (smoking, dietary practices, alcohol consumption, sexual practices, exercise, etc.), and also to attempts to determine the effects of the social environment on the individual (nature and extent of social supports, prevalence of domestic violence, etc.) The physical environments, inside and outside of the workplace, are also important health determinants, especially as they concern: (i) occupational exposure to a variety of agents (physical, chemical, and biological) and structures of work process or organization; and (ii) the growing recognition of the health effects of indoor exposure to pollutants. Linkages between national prosperity and population health lead to the recognition of a host of potential determinants: distribution of income, allocation of social capital (such as spending on labour-market adjustment and early childhood development programmes), and unemployment rates, to name a few.

Given the complexity of the dimensions of health, how can one define the role of the health care system in the production or maintenance of community health? Obviously, community health cannot be defined as the sum of services provided by physicians within hospitals and the broader community. This is not to deny the fundamental value of many medical interventions: immunizations, antibiotics, many surgical procedures, secondary prevention activities such as Pap smears and treatment of hypertension, and rehabilitation or tertiary prevention such as treatment to prevent recurrences of strokes or heart attacks. Yet many observers (notably Thomas McKeown but see as well McKinley, Canadian Institute for Advanced Research, etc.) have concluded that broader social factors - increasing standards of living, improved nutrition, housing, water supplies, education, etc. - have had the most fundamental effects on improving health during this century.

These are not radical ideas. It is instructive to examine A Vision of Health: Health Goals for Ontario, published in 1989 by the Premier's Council on Health Strategy. The relationship between the provision of health care to the broader socioeconomic determinants of health status is seen in the vision statement:

> "We see an Ontario in which people live longer in good health, and disease and disability are progressively reduced. We see people empowered to realize their full health potential through a safe, non-violent environment, adequate income, housing, food and education, and a valued role to play in family, work and the community. We see people having equitable access to affordable and appropriate health care regardless of geography, income, age, gender or cultural background. Finally, we see everyone working together to achieve better health for all."

The document outlined the following five goals:

Goal 1: Shift the emphasis to health promotion and disease prevention.

Goal 2: Foster strong and supportive families and communities.

Goal 3: Ensure a safe, high quality physical environment.

Goal 4: Increase the number of years of good health for the citizens of Ontario by reducing illness, disability and premature death.

Goal 5: Provide accessible, affordable, appropriate health services for all.

Such attempts to re-orient the structure and functioning of the health care system arise from a number of issues or conundrums posed by the examination of a population's health:

(1) Most of the chronic disease burden experienced in the late twentieth century involves diseases with multifactorial causes (eg. cancers, heart disease, mental illness, accidents and injuries, musculoskeletal disease). The roots of such health problems are not as amenable to traditional patient-centered medical models of prevention, diagnosis and treatment as they are to population-level interventions.

(2) Access to health care services has not equalized health status across socioeconomic levels. In fact, evidence from some countries, such as the United Kingdom, suggests that health inequalities between the highest and lowest socioeconomic strata may have worsened since the establishment of national health systems.

(3) The health status of any community is not uniform; numerous and consistent subpopulations in poorer health can be demonstrated - the poor (especially single mothers), immigrants, native people, many elderly, the physically and psychiatrically disabled. Such higher-risk, poorer health groups may also suffer from a concentration of determinants which are detrimental to their health: poor housing, environmental contamination, under- and unemployment, increased occupational risks, unsupportive social networks, greater levels of violence, low self esteem and coping abilities, substance abuse, etc. Even within socioeconomic strata, marked differences in mortality between highest and lowest levels can be demonstrated.

(4) A wide variety of political, social and economic conditions or policies can be shown to affect the health of a community, eg. integration into social networks (as summarized by House et al. 1988), employment and labour-market adjustment policies (an instructive comparison can be made between Sweden and Britain during the eighties (CIAR, 1990)), the provision of early childhood development programmes for high-risk families (which has led in Ontario to the recently-funded series of "Better Beginnings/ Better Futures" projects), and others.

(5) The poor have shorter life expectancy and shorter disability-free life spans. Class-related differences in mortality in Britain have been stable since the beginning of this century, even though the causes of death have markedly changed over the last 90 years (Hertzman, 1990). There is thus a compelling reason to question prevention or promotion activities that focus on risk factors for specific diseases that are more prevalent in lower socioeconomic strata (eg. smoking and lung disease or lung cancer) expecting that class differences in mortality will lessen or disappear. Without addressing the complex constituents of poverty, evidence suggests that other disease processes will replace those reduced or eliminated, maintaining the mortality differential. Since the introduction of Medicare, there has been an increase in the use of hospital and physician services by the poor (see Manga, 1987). However, this has not led to an elimination of the gap between the health status of the poor

and the non-poor. Moreover, there is some evidence to suggest that "persons of all income levels make use of similar levels of service during episodes of illness, but poor persons use fewer preventative and health maintenance services during periods of favourable health" (Newacheck, 1988). Finally, with respect to immigrants and refugees, the report Multicultural Health Care Needs Study (1990) found that although OHIP addresses financial barriers to health care, "language and cultural barriers prevent them from accessing the system and enabling them to make informed decisions about their care and participate in planning".

(6) International comparisons strongly suggest that the level of a nation's prosperity, and the manner in which that prosperity is distributed (the examples of Japan (Marmot, 1989) and the Nordic countries are most noteworthy here), are more important determinants of the population's health status than are such measures as per capita income, national expenditures on health care, physician or hospital bed:population ratios, etc.

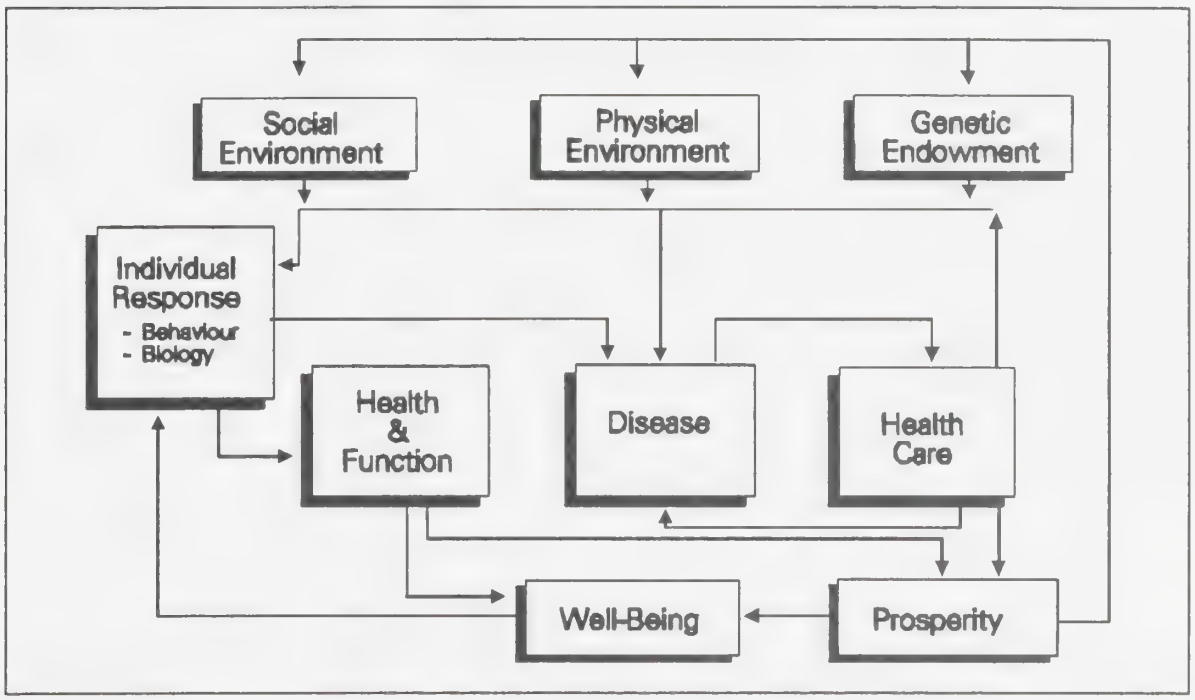
There is growing recognition that the formal health care system is only one of many places that people with health concerns turn to. Friends, family, workmates, traditional healers (in native and many non-european communities), alternative health practitioners (midwives, chiropractors, etc.) and broader social networks help people deal with many issues, as do a variety of self-help, volunteer, commercial, and governmental agencies (principally within but not limited to Ministries of Health and Community and Social Services).

While the organizational voices of the medical profession (the provincial medical associations and regulatory Colleges, and the Canadian Medical Association) and the institutional sector (notably, the provincial hospital associations) have traditionally held an important role in the formulation and alteration of provincial health policies, this position is increasingly being challenged. Powerful political forces such as the nursing profession and the developing midwifery discipline seek to broaden and re-distribute roles and responsibilities for the formulation of health policy and the provision of health care services.

Challenges to the traditional role of the medical profession and institutional sector in policy formation underscore the concerns of provincial governments, and segments of the population, that health care resources are not being used in appropriate and efficient manners. Growing awareness, within the medical community, of the need for widespread empirical evaluation of the "science" of medicine has been stimulated by two decades of analysis by health systems researchers and by significant alterations in the U.S. health care system since the late seventies. Thus, one sees the growth in acceptance and practice of such processes as clinical epidemiology, institutional quality assurance, technology assessment, development of practice guidelines, peer review of physician medical practice, etc. Provincial government mechanisms such as the global budget funding of hospitals, limitations on physician fee schedule increases and plans for utilization controls (as outlined in the recent Ontario government/OMA contract) are all examples of the overt or tacit acceptance of the limitations on improvements to population health through increasing spending on the delivery of health care services. Decentralization of responsibility for health care planning, and coordination with the social service sector, can be seen in plans for expanding the role and responsibilities of District Health Councils in Ontario which contributes

to the trend to allow regions and municipalities to exert greater control over health care planning and resource allocation.

This brief survey of health policy developments does not do justice to what is a complex, evolving and fascinating realm. In this paper we will use the framework provided by Evans and Stoddart (1990) on the determinants of health to describe the current situation in Hamilton-Wentworth. As is seen in the framework, a series of interrelated factors (genetic endowment, the physical and social environments, and the health care system) act on the individual, determining such characteristics as "health", "function", "disease" and "well-being". The framework also attempts to indicate that overall economic prosperity has numerous effects on the individual and collective environments, and is an important determinant of well-being. Based on the framework the health of Hamilton-Wentworth residents will be examined in terms of health care, disease, health and function, genetic endowment, individual response (behaviour, biology and lifestyle), physical environment, and social environment.



2.0 Health Care Services in Hamilton-Wentworth

2.1 The Health Care System in Ontario

Ontario's health care system is characterized by high rates of institutionalization and spending per capita. In fact, Canada's per capita spending on health care is higher than that of any other country with a national health care system, and Ontario has one of the highest provincial spending rates on a per capita basis. Approximately 91% of expenditures are allocated to institutional health care, doctors' and other practitioners' fees, and emergency and special services. Only nine percent of the health care budget is allocated to community based care and mental health.

The 1988-1989 budget of $12.6 billion is allocated as follows:

o	Institutions	52%
o	OHIP Expenditures	32%
o	Emergency and special services	6%
o	Mental Health	5%
o	Community Based Care	4%
o	Administration	1%

Source: Ontario Ministry of Health, Ontario's Health Care System: Some Facts and Figures.

A number of trends published by the Ontario Ministry of Health in the publication Ontario's Health Care System: Some Facts and Figures, underlie the growing concern over the increasing cost of the maintaining the present health care system:

- In the last 10 years, the cost of health care in Ontario has risen by 63.4% while the Provincial economy has grown by only 42.7%.

- One in every three tax dollars in Ontario goes to health care, up from one in every four a decade ago.

- Ministry of Health spending more than tripled in 10 years - from just under $4 billion in 1978 to $12.6 billion in 1988.

- The Ontario Drug Benefit Plan costs have been growing by more than 20% per year. The plan, covering the cost of prescription drugs for those over 65, social service recipients, and a number of other eligible recipients, is now costing nearly $600 million per year.

These trends spurred numerous studies (eg. Evans, Spasoff, Podborski), and led to the formation of the Premier's Council on Health Strategy. As a result, the Province initiated public discussion on ways to develop a system focused on health promotion, disease prevention and community care. The report Deciding the Future of Our Health Care: An Overview of Areas for Public Discussion identified a number of areas for public discussion to assist the government in "seeking to develop more community care alternatives and to create tighter links between institutional and community services". The five areas for public discussion were:

enhancing the role and responsibilities of consumers; strengthening community based health care; maintaining the role of public hospitals, including psychiatric and teaching hospitals; integrating private sector strengths and resources; and, improving quality assurance and treatment effectiveness. Although the Premier's Council was created by the past Liberal government, recent Council publications and several of its Committees suggest a commitment to the existence of broad restructuring of health care policy.

2.2 The Health Care System in Hamilton-Wentworth

The estimated total expenditure on health care in Hamilton-Wentworth was $726,609,062 in 1988/89. This represents a 55% increase from 1984/85. The estimated breakdown of costs in 1988/89 was 53% on hospitals and institutions, 25% on physician services, 4% on the Ontario Drug Benefit Plan, and 18% on other health care services. In 1984/85 the estimated breakdown of costs was 57% on hospitals and institutions, 26% on physician services, 3% on the Ontario Drug Benefit Plan, and 14% on all other health care costs. It should be noted that Hamilton-Wentworth has many specialized health care services and serves as a tertiary referral centre for the Central-West Region. This function tends to increase total and per capita health care expenditures in comparison to neighboring regions. Per capita costs for public health are lower in Hamilton-Wentworth than the provincial average, with the Region lying in the lowest quarter of per capita expenditures (Medical Officer of Health, personal communication). The per capita cost for Home Care (home nursing, physiotherapy, speech therapy, homemakers, etc.) was the highest in southwestern Ontario, and was nearly double that for the province ($21.40 versus $11.53, respectively). This may reflect a well-developed and well-utilized local Home Care network (and inclusive of regions with minimal home care systems in the provincial average). The percentage of health care dollars spent on Extended Care (chronic institutional care with regular nursing assistance) was lower in Hamilton-Wentworth (2.5%) than for the province (3.1%), reflecting the greater use of Home Care services and a less dependency on extended care (Poland et al., 1988). It could also reflect the low number of Extended Care beds in the Region (District Health Council 1991).

Hamilton-Wentworth has a well organized institutional health care system. The Hamilton-Wentworth District Health Council, the Faculty of Health Sciences at McMaster University and Mohawk College, and affiliated teaching hospitals, cooperate in setting common goals and objectives, sharing resources and rationalizing and regionalizing health services. Clinical services providing mainly primary and secondary level care continue to exist in several locations to meet community needs and to provide support for comprehensive health care programs in the affiliated teaching hospitals. The development of the health services network has come from continuous study, planning, cooperation and agreement by those responsible for operating health services in Hamilton. Similar cooperation and coordination has been achieved in other areas such as Biomedical Library Services and Biomedical Engineering.

Each major clinical discipline (eg. surgery, paediatrics, emergency) is organized so that the head of the University Clinical Department functions as the Coordinator for the discipline for the Hamilton-Wentworth. As well, the Health Services Advisory Committee of the District Health Council, plays a leading role in

planning, implementation and monitoring health services provided by the major institutions. Where health services involve multiple disciplines and/or multiple institutions, formal arrangements between primary specialities, including the appointment of a coordinator, have been undertaken to ensure the optimal use of resources. Emergency medical services and cardiology/cardiovascular diseases are examples of services involving multiple disciplines and institutions for which formal coordinating mechanisms have been established.

Communication and some coordination exists among community health and social support agencies, at least those which are directed at elderly clients. However, communication and coordination between community agencies and the institutional sector has been limited. Some examples of community health and social support programs operating independently of the institutional system and, in many cases, planned and operated on a largely ad hoc basis with respect to other community agencies and programs are: recreational programs, home support programs, non-profit housing programs, and information and referral services.

2.2.1 Health Care Personnel

In 1984, 1,266 physicians, 224 dentists, 5,019 nurses and nursing assistants were registered as health care professionals in Hamilton-Wentworth. This is equivalent to about 837 people per physician, nearly double that of the province (456 people per physician). This ratio is also higher than for the Central-West Region, which includes Hamilton-Wentworth, where the corresponding figure is 553 people per physician. This lower ratio likely reflects the number of doctors who bill OHIP for their services, and does not include doctors on salary (in McMaster's Faculty of Health Sciences or community health centres), those funded by capitation, nor interns and residents in training. The ratio of population to public health nurses is one of the highest in the province at 5,520 people per public health nurse; the comparable ratio for the province is 4,026 people per public health nurse (Poland et al. 1988). Although the complement of public health nurses has increased in the last two years, the region still compares unfavorably with the provincial average.

2.2.2 Institutions

In 1989, there were 3,080 hospital beds available in seven hospitals in Hamilton-Wentworth, including acute, rehabilitation, chronic, alcohol treatment, geriatric assessment and psychiatric beds. Data were not available to compare these numbers with averages for the Central-West Region or with the province as a whole. In addition, as of January 1991 there were 2,403 beds in licensed nursing homes and homes for the aged. Data from the Hamilton-Wentworth District Health Council indicate that the region has one of the lowest number of long term care beds per 1000 population in the province. Currently about 4,200 seniors (7.4%) reside in long-term facilities. Given the aging of the population, the absolute number of seniors will increase over the next 40 years. Unless more emphasis and support is given to assist seniors in continuing to live in their homes and out of institutions, the need for long term care facilities is also likely to increase. It is anticipated, however, that the greater health awareness of the baby boom generation may keep this generation healthier longer, thus altering present needs for long-term care facilities (District Health Council 1991, Poland et al. 1988, Reynolds and Chambers 1990a, Reynolds and Chambers 1991).

2.2.3 Health Care Utilization

During the fiscal year 1987-1988, there were 70,719 hospital separations in Hamilton-Wentworth hospitals. A hospital separation refers to the discharge of a patient, alive or dead, from hospital. Such statistics are of limited usefulness since they count the number of episodes of a disease, and not the number of patients (for example, a patient admitted and discharged for the same health problem four times during one year will contribute four hospital separations). They also do not include information on those who receive medical care from such hospital departments as emergency or outpatient clinics, those who are not seriously enough ill to warrant hospitalization, or those who die prior to hospitalization.

In Hamilton-Wentworth in 1987-1988 there were 60,340 hospital separations for the main causes of hospitalization as defined by the Ontario Ministry of Health. This was 14% less than the provincial rate, after adjusting for differences in the age structure of the two populations. The main causes of hospitalization accounted for 766,134 days in hospital, an average of 12.7 days per hospital separation, which is higher than the provincial average of 8.9 days. This longer length-of-stay may reflect Hamilton-Wentworth's tertiary referral role for the Central-West Region, meaning more severely ill people are treated here than on average. There is no reason to suspect that Hamilton-Wentworth's residents are sicker than their neighbours. In fact, when differences in the age and sex composition of the Region's population are considered, rates of ill-health were lower in Hamilton-Wentworth when compared to the Ontario average (Ontario Ministry of Health, 1990).

Additional information on health care utilization, including physician, nurse, chiropractor, psychiatrist, dentist, social worker and other health professional visits, will be available in the summer of 1991 with the release of information from the 1990 Ontario Health Survey.

2.2.4 The Hamilton-Wentworth District Health Council

The Hamilton-Wentworth District Health Council (DHC) is an advisory body to the Ontario Ministry of Health. It is composed of citizen volunteers who assist the Ministry of Health in planning the health care system in Hamilton-Wentworth. District Health Councils, (DHCs) are based on the premise that the people who live and work in a community are in a very good position to determine their health needs.

The Council is committed to equitable partnerships between providers and the public in planning and coordinating services which support, maintain and enhance the health of individuals and the community. The mission of the DHC, in collaboration with other planning bodies, is to ensure a responsive and progressive health care system which is cost effective, accessible to all and which maximizes the choice and autonomy of individuals.

Possibilities exist for enhancing the roles of DHC in planning and coordinating local health services. The four possible areas for enhanced activity outlined in 1988 by then Minister of Health, Elinor Caplan were allocating funds, determining

human resource requirements in the health field, strengthening area wide planning, and achieving integration of health and social service planning. The Hamilton-Wentworth DHC has developed an action paper which will provide the basis for planning and development in Hamilton-Wentworth. The paper outlines an "evolutionary model" which would lead to a "revolutionary model".

In the short term, the DHC would assume some new or expanded roles in the areas suggested by the Province, as well as in locally identified areas such as getting more consumer involvement in committees and task forces. This evolutionary approach is favoured in the short term in order to build consumer acceptance and to acquire additional resources for new or expanded roles. In this model, the accountability mechanisms in place for the DHC would remain largely unchanged, although involvement in joint health and social service bodies should increase.

The revolutionary option would involve the DHC (or a District Human Services Council) in funding and planning local health services, or in acting as a planning and advisory body to a local funding body. The DHC would also have much broader planning responsibilities in the areas envisioned in the Provincial "enhanced roles" document and beyond. Ideally, evolution would be towards a joint health and social services planning (and perhaps) funding body, that had local accountability. The organizational structure and reporting mechanisms would have to be changed under this model, to allow for increased accountability. Two possible models are being advanced by a working group of the DHC. Model one involves local accountability being achieved by having the DHC report to the Health and Social Services Committee of the Regional Council. The DHC would also advise the Provincial government on Provincial/ Regional issues. Model two involves local accountability being achieved by having the members of the DHC elected by the public, and having an indirect reporting relationship to both the local and Provincial governments.

The DHC has proposed a number of goals, to be reviewed in strategy meetings in May, 1991. They are:

- To identify health needs in Hamilton-Wentworth
- To undertake strategic planning to meet health needs for Hamilton-Wentworth
- To collaborate in planning coordinated health and social services in Hamilton-Wentworth
- To promote and participate in the devolution of authority for health and social services to the local level
- To promote a partnership between providers and the public in planning and coordinating health care services
- To provide a forum for discussion, education and public awareness, relating to health care issues in Hamilton-Wentworth.

3.0 Community Health Status

3.1 Mortality

3.1.1 General and Cause-Specific Mortality

Cardiovascular disease was the number one killer of Hamilton-Wentworth residents in 1987, followed by cancer, respiratory diseases, injuries and poisonings, and digestive diseases. The following table provides numeric details:

General Mortality, Hamilton-Wentworth, 1987
Males and Females Combined (except where noted)

Health Problem	Number of Deaths	Crude Rate (per 100,000)	Comparison to Ontario
Cardiovascular Disease	1,547	365	no difference
Stroke	270	64	no difference
Cancer	962	227	no difference
Lung	258	56	no difference
Genitourinary	133	31	no difference
Breast (females)	77	35	no difference
Colorectum	81	19	lower
Respiratory Disease	317	75	higher
Injuries and Poisonings	198	47	no difference
Digestive Disease	142	34	no difference

Mortality rates in Hamilton-Wentworth and Canada have dropped dramatically this century and the overall death rate is presently quite low (approximately 7.2 deaths per 1,000 population per year). Age- and sex-specific mortality rates for both sexes and for all ages below 50 (except infants) are below five deaths per thousand. The decrease since 1950 in mortality rates for those over 50 has been significant and has been greater in women than men. This difference arises because at every age, males have higher death rates than females, especially from the mid-teens onwards, due largely to higher rates of accidents, suicide, heart disease and lung cancer in men.

> "Some believe that genes in the "X" chromosomes powerfully favour female survival and make women better able to resist many fatal illnesses and diseases... Others argue that behavioural factors are key contributors to earlier male mortality... For example, they link men's higher death rates at earlier ages to higher rates of cigarette smoking and alcohol consumption, Type "A" behaviour and risks associated with high impact sports. Men's more frequent exposure to environmental hazards through their work is another reason given for women's greater longevity... It is likely that the differences in life expectancy are due to all of the above working in concert." (Ontario Advisory Council on Women's Issues 1991)

However, recent data suggest that the increasing gap between male and female longevity may be stable. Improvements in life expectancies for those over 50 of both sexes are likely to occur (Hamilton-Wentworth Planning and Development Department, 1989).

3.1.2 Infant Mortality

The infant mortality rate is a widely used indicator of the health of communities. It measures the number of deaths each year of children less than one year of age divided by the yearly numbers of live births. Significant improvements in maternal and infant care have occurred in the last several decades in the western world, markedly lowering the infant mortality rate. As a result, this rate is a less sensitive measure of differences in the health status of one part of the community and another. Low birth weight (the percentage of babies below 2500 g. at birth) tends to be more sensitive to differences in maternal factors which influence the health of the infant and mother (such as the mother's age, nutrition, access to prenatal care, smoking, etc.)

In Canada as a whole, the infant mortality rate in 1986 was 7.5 deaths per 1,000, down from a rate of 15 in 1971. However, in both periods babies born to parents in the poorest neighbourhoods were twice as likely to die before their first birthday as babies born to parents in the richest neighbourhoods (National Council on Welfare, 1990).

The infant mortality rate for Hamilton-Wentworth in 1987 was 7.7 per 1,000 live births. This was slightly higher than the infant mortality rate for Ontario which was 6.8 per 1,000 live births. Most of these deaths were due to respiratory conditions (2.5 per 1,000 live births) and congenital anomalies (1.8 per 1,000 live births) (Ontario Ministry of Health, 1989 and 1990).

3.1.3 Life Expectancy

Life expectancy measures the average period of time one can be expected to live from a certain age. It can be calculated from any age, but conventionally is reported from birth (but often as well at age 35, 65, etc.). Life expectancy is slowly increasing, largely due to improvements in infant mortality rates but as well to a number of other factors: decreases in deaths due to motor vehicle accidents, improvements in such lifestyle factors as smoking, nutrition, exercise, specific medical interventions, etc.

The "health gap" between the rich and poor can be illustrated in terms of life expectancy. Studies have found that the poorer the neighbourhood, the shorter is the life expectancy of residents. In fact, in Canada in 1986, "men in the poorest neighbourhoods lived 70.4 years on average, and men in the richest neighbourhoods lived an average of 76.1 years, so the health gap was 5.7 years. For women, average life expectancy ranged from 79.1 years to 80.9 years, and the health gap was 1.8 years. The health gaps were smaller for both men and women in 1986 than in 1971, but the same general patterns prevailed." (National Council of Welfare, 1990)

3.1.4 Potential Years of Life Lost (PYLL)

PYLL measures "premature" death, defined as death occuring before the age of 75. One of the uses of this measure is to highlight potentially preventable causes of death. PYLL ranks higher causes of death that more regularly strikes younger people (birth defects, suicide, car accidents), than more common causes of death which occur around the

average life span (strokes, many types of cancer, chronic lung disease). Thus, the leading cause of PYLL are: accidents, cancer, heart disease, and pregnancy/birth complications.

In 1987, the top three causes of PYLL for males were: diseases of the circulatory system (4720 years lost), cancer (4309 years lost) and injuries/poisoning (3788 years lost). For women during the same period, the top three causes were: cancer (3543 years lost), circulatory disease (1868 years lost) and injuries/poisoning (1302 years lost) (Ministry of Health 1989).

3.2 Morbidity

3.2.1 General Morbidity

Morbidity information (that is, estimates of physical, emotional or mental ill-health) are provided from a number of sources: specific health surveys such as the Canada Health Sruvey of the late 70's and the 1990 Ontario Health Survey (OHS), registries for a particular disease (for example, the Ontario Cancer Registry), hospital separations and other sources. The following table lists the 10 most common causes of hospitalization for the fiscal year 1987-1988 (data from the Ontario Ministry of Health 1990):

General Morbidity, Hamilton-Wentworth, 1987-88
Males and Females Combined (except where noted)

Health Problem	Number of People	Crude Rate (per 100,000)	Comparison to Ontario
Complications of Pregnancy (females)	7,420	3,418	no difference
Cardiovascular Disease	7,351	1,736	lower
Stroke	1,143	270	lower
Digestive Diseases	5,991	1,415	lower
Respiratory Diseases	4,568	1,079	lower
Genitourinary Diseases	4,324	1,021	lower
Cancer	4,025	951	lower
Lung	393	93	no difference
Genitourinary	836	197	lower
Breast (females)	369	170	no difference
Colorectum	314	74	lower
Injuries and Poisonings	3,972	938	lower
Musculoskeletal Diseases	3,225	762	no difference
Nervous System and Sense Organs	2,489	588	no difference
Mental Disorders	1,709	404	lower

Further information on the prevalence of various health conditions, particularly those which contribute substantially to morbidity (for example, arthritis) but need infrequent hospitalization, will be made available upon release of the 1990 OHS data for Hamilton-Wentworth.

3.2.2 Cancer

Data from the Ontario Cancer Registry show that the actual number of Hamilton-Wentworth residents with malignant cancer is somewhat lower than the hospital separations. Below are listed the five most common malignant cancers for residents of Hamilton-Wentworth (Ontario Cancer Registry 1990).

Five Most Common Cancers in Hamilton-Wentworth, 1986 - Females

Health Problem	Number of People	Crude Rate (Per 100,000)	Comparison to Ontario*
All Malignant Cancers (excluding non-melanotic skin cancer)	845	442	no difference
Breast	211	97	no difference
Colorectum**	116	53	lower
Lung	80	37	no difference
Uterus**	52	24	no difference
Ovary**	40	18	no difference

Five Most Common Cancers in Hamilton-Wentworth, 1986 - Males

Health Problem	Number of People	Crude Rate (Per 100,000)	Comparison to Ontario*
All Malignant Cancers (excluding non-melanotic skin cancer)	913	410	no difference
Lung	211	102	no difference
Prostate	143	69	no difference
Colorectum**	122	59	no difference
Bladder	63	31	no difference
Stomach	44	21	no difference

* Comparing average rates for Hamilton during 1984-1986 to those of Ontario for the same time period.
** Average number and crude rates for Hamilton-Wentworth during 1984-1986.

Although trends in cancer rates over the past several years for Hamilton-Wentworth have not been presented, it is important to note that while the rates of new cases of cancer are falling in some instances (stomach cancer in men and women, cancer of the cervix in women) or remaining stable (cancer of the bowel and uterus in women), certain forms of cancer are on the increase: lung cancer and malignant melanoma in men and women, lung and breast cancer in women, and bowel and prostate cancer in men (Canadian Cancer Statistics 1990).

3.2.3 Heart (Cardiovascular) Disease

Heart disease and strokes are common causes of death and ill-health, with rates being higher in men than in women. Over the past decades mortality rates from heart disease and stroke have steadily fallen, a result of a number of factors: decreases in smoking, improved nutrition, increased numbers of people exercising, better detection and control of high blood pressure, and improvements in both treatment and prevention of repeat heart attacks and strokes.

3.2.4 Respiratory Disease

Most respiratory disease, especially chronic bronchitis and emphysema, is the product of tobacco smoke. What is particularly worrisome is that parental smoking causes damage to newborns, infants and children, affecting the development of their lungs and leading to increases in respiratory infections and asthma. Exposure to environmental tobacco smoke at older ages is also associated with lung problems and an increase risk of lung cancer.

Occupational exposure in a variety of industries also contributes to the community level of respiratory problems. Air pollution, of it from industrial sources but significant quantities from energy production and vehicles, is also associated with respiratory problems, especially in those with asthma and the elderly.

3.2.5 Low Birth Weight

Low birth weight provides an indication of both the health of the mother and the health of the infant. For example, smoking and poor nutrition effect the health of the mother and are known to decrease the birth weight and therefore adversely effect the health of the newborn. Rates of infant mortality and disability are higher in low birth weight babies. Of the 6,086 live births in Hamilton-Wentworth in 1986, 5.8% were of low birth weight (that is, less than 2,500 grams) with 0.8% being of very low birth weight (less than 1,500 grams).

Low birth weight is associated with low socioeconomic status. In Canada, 7% of babies born to parents in the poorest neighbourhoods were low birth weight in 1986, compared to 5% in the richest. Also, teenage mothers have a greater risk of having low birth weight babies, and teenage girls in the poorest neighbourhoods are four times more likely to have babies than teenage girls in the richest (National Council of Welfare, 1990).

3.2.6 Dental Health

With the use of fluoride in the water and toothpastes and intensive dental health programs in the school, many children today will never be afflicted with dental cavities. The elderly, however, have not had the benefit of these innovations and appear to be at particular risk for poor dental health. For example, a survey of the residents of North Hamilton revealed that 81% of seniors had not been to a dentist in the past year. (Data from the North Hamilton Community Health Survey.) More information on the dental health of all Hamilton-Wentworth residents will be available from the results of the 1990 OHS.

3.2.7 Acquired Immune Deficiency Syndrome (AIDS)

In recent years, the threat of AIDS has changed the sexual revolution from the "free love" vision of the 1960's and 70's to one of "safe sex" in the 80's and 90's. The transition has been accompanied by the such developments as the installation of condom dispensors in schools, needle exchange programs, and public education campaigns which have made "HIV" a household term.

According to Department of Public Health Services statistics, there were 16 cases of HIV positivity reported to the Department in 1989, and a further 20 up to September, 1990. There were 11 cases of AIDS reported in 1989, and a further 6 up to September 1990, although there are a variety of reasons to expect that the true number of cases of HIV positivity and AIDS are greater than these numbers indicate. The rate of hospitalization for AIDS in 1987 was no different in Hamilton-Wentworth than in the rest of the province. In 1988, there were 9 deaths from AIDS in Hamilton-Wentworth, a mortality rate of 2 per 100,000 population. All were male, and between 15-69 years of age. These mortality rates are less than 1% of the deaths from cardiovascular disease (Ontario Ministry of Health, 1991).

3.2.8 Function

In the past decade, there has been increasing awareness of quality of life as opposed to length of life. Throughout this century, Canadians have been living longer. However, has overall health and well-being actually improved? Wilkens and Adams found that even though the average life expectancy of Canadians has increased six years over the past 25 years, the expected years of without disability only rose by 1.4 years. Thus, although we are living longer, the extra life is likely to be with some disability. This has important implications for the future of Hamilton-Wentworth, especially given the aging of the population (Reynolds and Chamber, 1990a).

There are many different ways to measure how capable an individual is of "functioning" on a daily basis (ie. going about personal or household chores, the capacity to work or take part in recreation, etc.). Health surveys can ask people how they rate their overall health, or how commonly they are limited by short-term or long-term disability. Other indicators of function are being developed. For example, McMaster in collaboration with Statistics Canada is looking at measures of "quality-adjusted life years" (QALYs), and population health expectancy (PHEs). Information in the 1990 Ontario Health Survey may provide a variety of ways of measuring quality-of-life, physical and emotional functioning, and more.

There is a strong link between health expectancy and income, just as there is between life expectancy and income. According to the report Health, Health Care and Medicare"

> "On average, Canadians in the lowest income group had 54.9 years of life in good health without restrictions on their activities. The number of years of good health increased steadily by income group and reached 65.9 years of good health for the highest income group. In other words, the gap between high income and low income people was 11 years of good health (p. 11)".

Low income people have more years of ill-health than high income people. In fact, people in the lowest group spent an average of 5.4 years unable to do major activities, compared to 0.8 years for the highest group.

In Hamilton-Wentworth, "with the exception of stress, low income earners were consistently worse off with respect to health status than those not in the low income category" (Infowatch: Health and Living Below the Poverty Line). Health status indicators considered were: self-rated health, satisfaction with health, level of happiness, satisfaction with social life, well being and presence of pain or discomfort which interferes with activity.

3.3 Genetic Endowment

There has been much controversy over the extent to which genetic endowment determines disease. While there are a number of genetic conditions which have been found to be completely genetically determined (for example, Down's Syndrome, sickle-cell anemia, cystic fibrosis), most of today's common diseases, such as coronary heart disease, diabetes or cancer, are known to be multi-factorial. What you inherit in your genes may render you susceptible to one or more diseases, but whether or not you develop that disease depends on a host of other factors: diet, lifestyle, stress, work, where you live. Studies of identical twins or of people who migrate from one country to another have provided much information on the role of "nature" (genetic endowment) versus "nurture" (social and physical environment). Measures of the genetic endowment of a community, however, are not available. While genetic endowment might help explain why one individual develops certain health problems while another doesn't, it doesn't help us understand differences between the health status of one community or population and another. These latter differences are much more likely to arise from non-genetic factors: socioeocnomic conditions, occupation, lifestyle, and others.

3.4 Individual Response (Behaviour, Biology, Lifestyle)

Factors such as nutrition, physical activity, tobacco and alcohol use and seatbelt use are all important in determining health status at both the individual and community levels. The Lalonde report was important in focusing attention on the importance of behavioral and lifestyle factors on health, and to a more limited extent on the impact of socioeconomic status on healthy behaviour.

3.4.1 Cigarette Smoking

In 1989, 25% of Hamilton-Wentworth residents over the age of 15 reported to be daily smokers, with approximately the same percentage of females as males smoking. This is equivalent to about 84,200 people. A recent issue of the Health Priority Analysis Unit's Infowatch said that: "Citizens living in low income households smoked slightly more (28%) than those not living in low income households (24%)...however, the very poor (based on a Statistics Canada index) smoked more than any other category (38.1% for males and 58.2% for females)."

Smoking rates do not vary substantially across age groups with the exception of those who are 65 years of age and over (for which the smoking rates are very low (7%)). Overall, smoking rates in most jurisdictions have been decreasing through the 1980's. The main targets for smoking reduction today include young children and young females. Continued education of the adverse effects of smoking, legislation to prevent sales to minors, economic measures such as increasing cigarette costs through increased taxation and the support of non-smoking environments in public places are seen as key activities to reach the Ontario Ministry of Health's target of not more than 15% of the community

who smoke (Reynolds and Chambers, 1990b).

3.4.2 Alcohol Consumption

Excess alcohol consumption can result in a variety of social, occupational, mental and physical problems. In 1989, 81% of Hamilton-Wentworth residents reported drinking alcohol in the past year. Using the consumption of 14 drinks or more in the past week as an indicator of heavy drinking, males were much more likely than females to drink at this level (20% compared to 6%). In fact, males were significantly more likely than females to drink everyday, binge at least five times in the past year on 10 or more drinks, and be classified as alcoholics. Overall, about 10% of Hamilton-Wentworth residents exhibit these indicators of problem drinking (Reynolds and Chambers, 1990b and Reynolds et al., 1991).

Overall, the percentage of heavy drinkers in the Hamilton-Wentworth Health Survey did not differ significantly between low income households and other households. In fact, "males, and possibly marital status were the only two 'risk factors' found here for heavy drinkers" (Reynolds and Chambers, 1990b).

The dangers of drinking and driving have been extensively publicized. Yet in 1989, about 18% of Hamilton-Wentworth citizens reported that they had driven after consuming two or more drinks in the previous hour (unpublished data, 1989 Hamilton-Wentworth Health Survey, Health Priorities Analysis Unit, 1991).

3.4.3 Physical Activity

Participation in physical activity at least weekly is an important contribution to current and future health. Nearly 80% of Hamilton-Wentworth citizens reported participating in physical activity at least once a week, and 63% at least 3 times a week (Buffett, 1991). However, using a physical activity index which includes frequency, duration and intensity of the activity, only 37% of Hamilton-Wentworth citizens participated in medium or high levels of physical activity (17% medium and 20% high). This leaves 63% of "active" citizens classified as having low physical activity. More females than males were in the low category, and level of activity was lowest among those 65 years of age and over (Buffett, 1991).

3.4.4 Nutrition

Information specific to Hamilton-Wentworth regarding diet and nutrition will be available from the 1990 Ontario Health Survey. An extensive food-frequency section was included in the survey which will provide information on body mass index (used to measure the extent of under-and overweight), and nutrient intake including dietary sources of calcium, fat, fibre and carbohydrate.

3.4.5 Sexual/Reproductive Health

Information obtained from the Ministry of Health shows that live births for Wentworth County remained relatively constant from 1984-86, and numbered 6086 births in 1986. In 1987, there were 1,332 therapeutic abortions and 33 stillbirths (Poland et al., 1988). With increased availability of medical technologies that can save the life of very premature infants, rates of low birth weight babies may actually increase with a concomitant decrease in stillbirths and, to a lesser extent, miscarriages and therapeutic

abortions.

In terms of sexually transmitted diseases (STD), limited data are available from the Regional Department of Public Health Services. In 1987, the following were reported to the Department: gonorrhea - 636 cases, syphilis - 39 cases, chlamydia - 710 cases, and herpes - 82 cases. For comparison, 1990 STD reports show that gonorrhea cases are substantially down (253 cases), as well as syphilis (16 cases) and chlamydia (565 cases). It should be noted that these numbers underestimate the true number of cases in the community.

Further information specific to Hamilton-Wentworth regarding sexual health will be available from the 1990 Ontario Health Survey.

3.4.6 Driving Habits

In 1989, 77% of Hamilton-Wentworth citizens reported to have driven a car, truck or van in the past year. Of these, 71% had driven less than 16,000 km (10,000 miles). Drivers reported that "some or most of the time" when they drive they: drive through yellow lights (33%), pass at intersections (22%), follow too closely (12%), and change lanes abruptly (9%). About 17% reported that they usually drive faster than others, 64% at the same speed, and 19% slower than others (unpublished data, Hamilton-Wentworth Health Survey 1989, Health Priorities Analysis Unit, 1991).

3.4.7 Seatbelt Use

From the 1989 Hamilton-Wentworth Health Survey, nearly 90% of drivers reported always or mostly always wearing a seat belt. As passengers, about 88% of people reported buckling up always or most of the time (Health Priorities Analysis Unit, 1991). No information is available concerning the rate of use of child restraint devices.

3.4.8 Illicit Drug Use

In 1989, 13% of Hamilton-Wentworth citizens reported using marijuana or hashish at least five times in their lives. LSD, speed and cocaine/crack were used by 2-4% of citizens at least five times in their lives. Heroin, solvents and other illicit drugs were very rarely reported (Unpublished data 1989 Hamilton-Wentworth Health Survey, Health Priorities Analysis Unit, 1991).

In a study of substance abuse treatment agencies, alcohol abuse was, by far, the most common substance for which clients sought treatment. Nearly 86% of those attending one of five treatment agencies in Hamilton-Wentworth had at least an alcohol problem (with or without other substance abuses). Thirty-one percent were treated for cannabis, 16% for cocaine, 9% for physician prescribed or recommended narcotics, 8% for hallucigens, 8% for physician prescribed or recommended tranquillizers, and 6% for tobacco. Other substances comprising less than 5% of clients included users of barbituates, anti-depressants, other narcotics, solvents, stimulants, other tranquillizers, and volatile nitrates (Poland et al., 1988).

3.4.9 Prescription and Over-the-Counter Drug Use

From the 1989 Hamilton-Wentworth Health Survey, the use of such drugs by citizens in a 30 day period was as follows: 65% used aspirins or other pain relievers; 4% tranquillizers; 5% sleeping pills; 23% stomach remedies or laxatives; 6% codeine, demerol or morphine; 9% antihistamines; 16% cold remedies; 9% antibiotics, 16% heart or blood pressure medicines; and, 25% other medicines or drugs (unpublished data 1989 Hamilton-Wentworth Health Survey, Health Priorities Analysis Unit, 1991).

3.4.10 Other

In addition to the health indicators discussed above, occupation, socioeconomic status, social support, ethnicity, stress, and overall well-being will be examined below as they relate to the physical environment, social environment, prosperity and well-being. A number of other areas from the 1989 Hamilton-Wentworth and 1990 Ontario Health Surveys are topics for future issues of the Health Priorities Analysis Unit's Infowatch. It is anticipated that these will form the basis of a third edition of the Fact Book on the Health Status of Hamilton-Wentworth citizens to be published in 1993.

3.5 Physical Environment

The impacts of health threats from environmental factors will be detailed in the discussion paper on **Environment and Health**. This section will therefore summarize only briefly several environmental factors not addressed in that discussion paper.

3.5.1 Traffic Accidents

Risks associated with traffic accidents are easily measured with mortality and injury statistics. There were 21 persons killed and 3,153 persons injured in traffic accidents in Hamilton-Wentworth in 1985 (HPAU and City of Hamilton Traffic Department). In 1986 the number of persons killed in traffic accidents was 34 (.08/1,000 persons), of which 15 were 15-24 year olds (.22/1,000 persons). The mortality rate due to traffic accidents was higher for males than females (.22/1,000 persons compared to .04/1,000 persons) (HPAU and Ontario Ministry of Health).

Children aged 5-9 are at a high risk of experiencing pedestrian injuries. This group experienced a rate of pedestrian injuries of 3.6/1,000 children, more than three times the rate for all other ages. Pedestrian injuries among children were especially common in a few city neighbourhoods. Research has shown that children from neighbourhoods with a higher prevalence of low-income families have higher traffic injury rates than other children (HPAU, Infowatch). Currently, a community development project is underway in neighbourhoods of Hamilton where child pedestrian injuries were found to be highest.

3.5.2 Occupational Health and Safety

Some occupational risks, such as the risk of death or physical injury due to work related accidents, are readily identified and measured. Other occupational risks, such as cancers related to long term exposure to hazardous substances or stress related illness caused by physical or organizational working conditions, are less readily identified and measured (see table below for a range of factors which may contribute

to occupational disease or illness).

Factors Capable of Causing Occupational Disease

Physical Agents
Temperature
- heat, cold, sudden changes
Barometric Pressure
Vibration
- air vibration (noise)
- mechanical vibration
Electricity
Radiation
- ionizing radiation (x-rays, gamma rays, radioactive substances)
- non-ionizing radiation (UV light, IR, microwaves)

Biological Agents
Animals
Plants
Microorganisms
- bacteria
- viruses, etc
Fungi
- venoms, toxins
Materials (dust, etc)

Chemical Agents
Dusts
Fumes
Vapours
Gases
Liquids

Ergonomic Factors
Workplace Design
- layout, traffic flow, mobility, etc
Lighting, sound, temperature
Process and equipment design
Person/ job fit

Psychological Factors
Nature of Occupation
- knowledge and technical requirements, societal responsibility, self perceived status, social isolation, etc.
Job Characteristics
- decision making, participation, resource availability, support from co-workers and supervision, work load/ responsibility for others, threat of disciplinary actions
Job Conditions
- job security, work hours, wages and benefits, etc.

Source: Yassi, Analee, Occupational Disease and Workers' Compensation in Ontario (Page 5).

In Hamilton in 1987 there were three fatal claims and 8,135 non-fatal claims settled under the Worker's Compensation Act. These claims involved disabling injuries and illness resulting in death, permanent disability or temporary disability. They did not include less severe injuries not involving compensation for lost wages or other disability benefits.

Statistics for Ontario indicate that 96% of claims settled in 1987 and 1988 were a result of traumatic injuries such as conturions, lacerations, fractures, concussions and heat burns (WCB). The most common sources of injury compensated by the WCB are working surfaces (eg. stairs), metal items (eg. equipment), and body motion (eg. bending, repetitive strain injury) (Canadian Centre for Occupational Health and Safety).

Industries with the highest rates of disabling work injuries are forestry, construction and manufacturing. There is a concentration of employment in manufacturing in Hamilton relative to Ontario and Canada. Work injury rates in industries such as agriculture, and community, business and personal services are likely to be artificially low because compensation covers only a small portion of these employees.

Only 4% of the WCB claims settled in Ontario in 1987 and 1988 were for occupational disease or illness such as tuberculosis, radiation effects or hearing loss. However, the number of WCB claims settled underestimates the number of work related diseases and illnesses. A study prepared by Analee Yassi for the Weiler Commission found (for example) that, using conservative assumptions, it is likely that "only 3.3% of the estimated number of occupational lung cancer deaths in Ontario are currently being compensated" and "only 13.5% are even reported" (Yassi, n.d., 157). The reasons found for under recognition of occupational diseases included "conceptual and procedural difficulties in the decision-making process within the compensation system, the lack of adequate training in occupational information, the dearth of research on the multitude of occupational hazards...the prolonged latency period that characterizes many serious

industrial diseases, their non-specific nature and the truly multifactorial etiology of these diseases" (Yassi, n.d., 519).

The Ministry of Labour is actively encouraging increased employer responsibility for identifying and minimizing long term risks due to exposure to hazardous substances. The Workplace Hazardous Materials Information System (WHMIS) legislation requires employers to have and make available material safety data sheets, which contain information such as the name of all known substances or products, the health effects of those substances, precautions to take to avoid health effects, and what to do in case of emergency. The employer is also required to label products, educate employees on their health effects and provide information to the Medical Officer of Health on request.

In addition, the Ministry of Labour requires firms with more than 20 employees to establish Workplace Health and Safety Committees to deal with issues effecting workers health and safety. However, as this legislation is difficult to enforce in workplaces with 20-50 employees and does not apply to smaller firms, the small business sector does not have the same ability to respond to health and safety concerns of employees as larger firms. This is important as small businesses represent an increasing large component of the workforce. Between 1978 and 1982 these small enterprises accounted for almost two-thirds of employment growth in the economy, and for all of the growth in the manufacturing and construction sectors (Hamilton-Wentworth Planning & Development Department, 1986).

While the increased risk of cancer associated with some occupational hazards has received significant study in recent years, other symptoms, such as fatigue, nausea or congestion associated with the quality of indoor air, are even less well recognized and recorded. These threats are less immediate than those of accident or injury and are associated with a less specific set of symptoms, signs and conditions than diseases such as cancer. Also, while a disproportionate number of health risks associated with accident or injury or with exposure to known carcinogens occur in the industrial sector, where unionization and management-employee committees have played a role in helping to deal with the problem, the risks associated with issues such as indoor air quality are likely found in a greater variety of workplaces, including small workplaces in the rapidly growing service sector.

Even beyond the recognition of diseases and illness characterized by non-specific symptoms, signs and conditions, which may be attributable to a variety of factors on and off the worksite, there is recognition in the occupational field that health goes beyond the absence of disease and disability. The health of the individual, as measured by their ability to attain an optimal level of physical, mental, emotional and social development, impacts on productivity. Company sponsored fitness and day care centres, smoking cessation programs, and flexible work weeks are evidence of an awareness in some firms of the relationship between the workplace and health in a broad sense. It remains to be seen the extent to which workplaces can address a host of other issues which can have serious effects on the physical, mental or emotional well-being of workers: pay equity, job security, labour adjustment/re-training, greater worker involvement in the organization and monitoring of production, sexual harassment, job slotting etc.

3.6 Social Environment, Well-Being and Prosperity

3.6.1 Definition

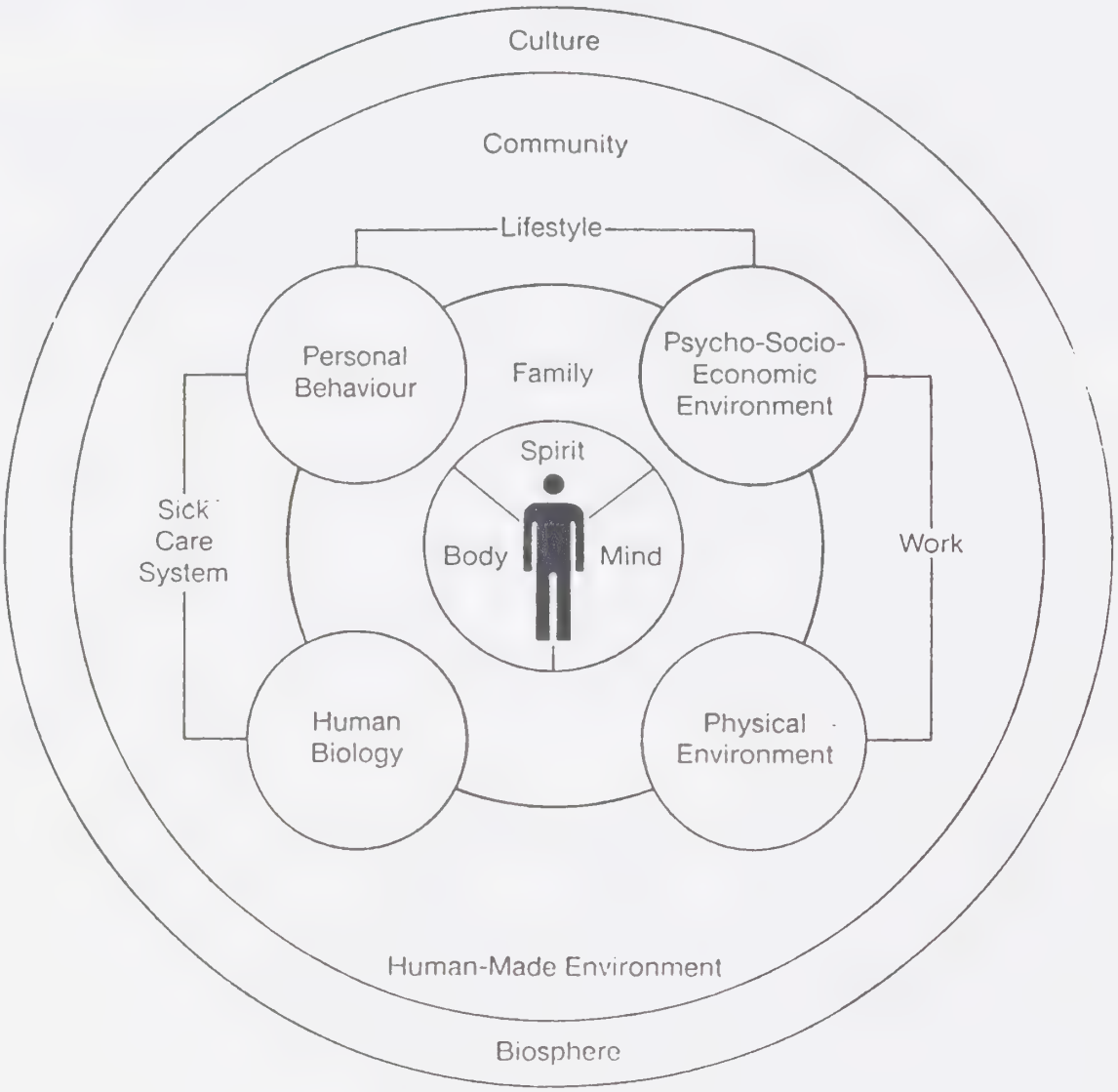
Using the Mandala of Health (see Figure 1) as an approach to defining the social environment, the Stoddart/Evans categories can be renamed as follows: Prosperity becomes the Economic Environment, Well-Being becomes the Psychological Environment, and Social remains the Social Environment - an all encompassing concept.

The social environment exists whenever two or more people co-exist in space. Thus it refers to the home environment, the street environment, the work environment, and in general, wherever people meet and interact. Its spatial boundaries can be very small (e.g. a room) or very large (e.g. an urban centre).

Community is a term often used to refer to a social environment. Peng (1989) describes community as "the interconnecting point from which individual identities and roles and relationships with others are defined" (p.10). The social environment is always a flux. When examining a social environment, one must also be aware of the physical surroundings and time. For example, a deserted street enclosed by abandoned buildings at midnight sets a very different context for human interaction than a lakeside park on a beautiful summer afternoon.

THE MANDALA OF HEALTH

A Model of the Human Ecosystem



Social environments are further defined by the characteristics of the people interacting. These characteristics and how they are played out can result in different outcomes. The schema below helps illustrate this point.

Conceptualization of the Social Environment

The physical environment and time set the context

- socio economic status
- race, culture, ethnicity, language
- age
- sex
- attitudes/perceptions/values
- disability
- type of work
- life experience and education (formal & informal)
- political persuasion
- etc.

for the complex interplay of human characteristics

Positive Outcomes	Negative Outcomes
- community organizing	- urban violence
- mutual support	- sexism
- facilitate opportunity	- ageism
- nurture individual health and well being	- stereotyping (negative stigma)
- skills sharing	- racism
- etc.	- violence against women and children
	- etc.

which can result in a variety of outcomes.

Identifying ways to measure elements of the social environment, and clarifying their relationship to disease prevention (or to the narrow definition of health) is a complex process. As well, measurements that are easily obtained may not best capture the 'true' picture. For example, the rate of official unemployment in a community is fairly accessible but may not portray the realities of underemployment (eg. people working part-time who need to work full-time). Thus, values for all the measurements identified below have not been obtained and may not be available. Moreover, the measures that have been identified are not comprehensive: there is no objective, comprehensive list of measurements which describe a sustainable community.

3.6.2 Social Environment

The term social environment captures the degree of interpersonal support and the threats people believe exist in their community, such as racism, support for their ethnicity, sexism, ageism, the level of urban violence, public safety, workplace safety, housing conditions, daycare opportunities, access to adequate health care, social equity considerations, community support, services for seniors, etc.

Some of the ways of measuring the level of health within the social environment are:

Urban Safety

This may be measured by the level of personal assaults and vandalism in the community, the number of reported sexual assaults (both public and domestic), and reported crimes against people of colour, etc.

Workplace Safety and Opportunity

Some workplace risks, such as the risk of physical injury or accidents can be measured. The number of people in Hamilton in receipt of Workers Compensation (8,138 in 1987) provides a rough estimate of the extent of risk due to physical accidents. Other workplace risks are less easily identified and measured (see section 3.5.2) In terms of workplace opportunities, the number and percent of women in positions of power, and the relationship between male and female incomes are examples of potential relevant measures.

Discrimination

Possible measures include: the percent of visible ethnic minorities in positions of community power (e.g. politicians, economic leaders, etc), the percent per capita convictions of Native people versus the rest of the population, community surveys of multicultural attitudes and beliefs, and others.

Housing

The guiding principles of the Regional Chairman's Task Force on Affordable Housing recognize that "adequate shelter, like food and water, is a necessity of life", and that "a full range of adequate, accessible and available affordable housing is a necessity for the social and economic health of the Hamilton-Wentworth Region" (Regional Municipality of Hamilton-Wentworth, 1991:6). Some measures of the affordability of housing are readily available, such as the size of assisted housing waiting lists and the percent of people spending more than 30% of their income on housing. For example, in 1985, there were 13,400 renters in the Region paying more than 40% of their household income on rent[1]. In 1989 the average size of the Hamilton-Wentworth

[1] This number likely understates the number of households in the Region experiencing affordability problems, as the cost of new housing has increased at a much greater rate than incomes since 1985 (See the Regional Housing Statement Update, 1990, p.31).

Housing Authority's waiting list for assisted housing[2] was 1,600 households, up 85% from 1985. Other components of the adequacy of housing, such as the number of persons living in overcrowded or unsafe conditions, are less readily measurable using available measures.

Social Services

The number of quality daycare spaces for infants, toddlers, preschoolers, open 24 hours as well as the adequacy of social assistance payments in comparison to the Social Planning and Research Council Adequate Budget Levels are but two suggested measures for this category.

Health Care

The level of access to a wide range of health-care professionals, (i.e. naturopaths, midwives, massage therapists, social workers, chiropractors, nurses, doctors) and free access to complete dental care and prescription eye care are relevant measures of health care in a community.

Living Conditions

Measures of the living conditions of households include the availability of opportunities to practice good hygiene (for example, easy access to washers and dryers), to prepare food oneself, and to safely store and preserve foods (percent of population with stoves and refrigerators). Statistics Canada's Catalogue of Household Facilities by Income provides an indication of the rates of ownership of certain appliances which may facilitate healthy living conditions. For example, 95% of households in Canada own a vacuum cleaner (this ranges from 85% of households in the lowest income quartile to 98% of households in the highest income quartile), and 75% of households in Canada own a washing machine (this ranges from 51% of households in the lowest income quartile to 92% of households in the highest income quartile). (Statistics Canada, 1986, Catalogue 13-218)

Social Equity

One measure of social equity may be the percent of the Regional budget spent on social equity considerations (for example, welfare payments, public transit, parks/recreation, culture, education, anti-poverty groups, daycare, public participation, etc.), or the extent to which there are pay equity and equal opportunity at local and regional government? If one tracked expenditures in the Regional Budget over a number of years, one could get a sense of how social inequity was being or not being addressed locally.

A description of the economic and psychological environments will now help to further shape the above definition of the social environment. The social environment should be seen as an all-encompassing term whereas the economic and psychological environments are only two ways of dividing a complex entity in order to aid explanation.

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[2] Excludes households on independent waiting lists maintained by private non-profit housing corporations.

3.6.3 Economic Environment

The economic environment can be defined by the level of economic wealth in the community. Economic wealth, or community wealth means everyone in the community has the opportunity to access/ purchase goods and services at a level which they deem necessary. This goes beyond the basics to include safe, secure, warm, clean (i.e. no cockroaches, cracks in walls, etc.) housing, fresh, nutritious, safe foods, and clean, durable and socially acceptable clothing. It also includes other items such as adequate and appropriate transportation, home furnishings, cleaning supplies, health care, personal care, sufficient recreation (i.e. membership in clubs, children's programs, etc.) good child care, special school needs, (i.e. field trips), and insurance.

Some of the approaches to measuring the health of the economic environment would be:

Income Spread

Commonly measured by comparing the percent of high income earners to low income earners or comparing the very rich versus the very poor. In Canada, the ratio of the income of the richest 20% to the poorest 20% between 1977 and 1987 is 7.5 (Social Planning and Research Council, 1991).

Level of Poverty

There are a number of methods of measuring poverty. A widely used method is the number or percent of persons or households below Statistics Canada's low income cutoff. In Hamilton-Wentworth in 1985 there were approximately 14,000 families and 20,000 unattached individuals living below Statistics Canada's low income cut-offs. For families, the incidence of low income was 14.4%, compared to 11% in Ontario. Among unattached individuals, 43% lived below the "poverty line" in Hamilton-Wentworth, compared to 41% in Ontario.

Sex Equality

Measures can involve the ratio between average incomes for women and men as well as determinations of the extent to which equal pay for work of equal value is the norm.

Employment Issues

It is necessary to measure the quality and quantity of available jobs. Some measures are the percentage of people unemployed, the percent underemployed, the number of people working at jobs for which they are overqualified, and people's level of satisfaction with their jobs (i.e. felt contribution).

Individuals Finances

One measure is the percent of the community in receipt of social assistance, (i.e. UIC, FBA, GWA, OAS, CPP). These rates are generally at or below poverty lines. The extent of personal savings and the amount of debt being carried by individuals or families are other examples.

Occupations

For example, the percentage of people employed in tradeable goods and services sector (ie. those productive activities which generate wealth) and those employed in the service sector.

Degree of Community Innovation

Measures may include community-based economic development initiatives and economic diversity in a community. Another measure may be the rate of new business formation.

The number of bankruptcies

The concept of the social environment as constantly in a state of flux is illustrated by trends in the number of personal and commercial bankruptcies in a year. Generally, the number of bankruptcies can be expected to increase during a recession and decline during periods of strong economic growth. In Hamilton-Wentworth, the number of consumer bankruptcies increased by 168% and the number of business bankruptcies increased by 117% between 1988 and 1990, as the economy entered a recession (Consumer and Corporate Affairs, 1985-90; Hamilton-Wentworth Economic Development Department, 1990).

3.6.4 Psychological Environment

The psychological environment includes real and perceived levels of life satisfaction, happiness, quality of life, sense of control, and social, mental and cultural well-being. A concern with the psychological environment as defined in this paper is reflected in the World Health Organization definition of health as a resource which gives people the ability to manage, cope with or change their environment.

Possible ways of measuring the health of the positive psychological environment include:

Family Relations

It is possible this could be done through a survey of the sense of control, sense of belonging and level of shared decision-making people feel in their families, the level of domestic assaults in the community, etc. For example, the 1990 Ontario Health Survey has a section on family relations from which the percent of dysfunctional families in Hamilton-Wentworth can be estimated.

Adequacy of Community Recreational Facilities

One measure is the number and quality of community parks and recreation facilities and any barriers to their access.

Citizen Participation

Examples of measures include: the number and role of citizen advisory groups to Council, the percent of the Regional Budget spent on citizen participation, voter turnout rates for municipal, provincial and federal elections, a survey of how

empowered people feel about their community, people's ability to participate in community decision-making and ability to have an impact on the community environment, the level of awareness among community members of Regional/City Advisory Committees which allow citizen members (for example, how are vacant positions advertised?).

Participation in Community Organizations

Involvement in community organizations such as churches, neighbourhood groups, women's groups, children's sports clubs, service clubs, is a measure of the psychological health of the community. The 1990 Ontario Health Survey asks about involvement in community organizations.

Opportunities for Personal Growth

One indication of the opportunities for personal growth is the number of people pursuing post secondary education, or further education, either for credit or personal interest (i.e. photography, typing, language courses). A composite of all persons from the community involved in such pursuits through various institutions and organizations (eg. McMaster University, Dundas Valley School of Art) is not readily available. Another indication of opportunities for personal growth are rates of illiteracy, school drop outs and truancy. Statistics Canada Literacy Surveys reveal a national illiteracy rate of 16% in 1989.

Number of Enriched School Programs

Cultural, sports, nature, science/technology and careers are examples of enriched school programs which may be available for all students in a community.

Community Cultural Opportunities

The existance of and involvement in theatres, especially community theatres, choirs, arts or cultural groups, etc. could measure a component of the psychological environment.

Community Special Events

This could include Festival of Friends, the Mum Show, Dundas Cactus Festival, Winona Peach Festival, neighbourhood fairs, street dances, etc.

4.0 Issues

Health is understood as going beyond the narrow simply the absence of disease, to include health and function, biology (genetics), lifestyle, and the physical and social environment.

Some health policy questions that may be evaluated in the context of a broader understanding of health are raised below (see also Discussion Paper No. 7: Environment and Health).

4.1 Hamilton-Wentworth Health Policy Questions

* What would a regional vision of health look like? How could/should a Regional vision of health incorporate a recognition of quality of life versus length of life? What should Regional health goals look like? Would they be similar to those elaborated by the Premier's Council? Who establishes, monitors, and revises health goals? How do we balance the emphasis placed on individual behaviour and health promotion activities or on environmental/social issues and policy interventions?

* Poverty, racism, sexism, ageism and other forms of discrimination (for example, against the disabled or against gay people) are factors in producing ill-health and diminishing the potential for individual and community well-being. How are social realities linked into a broader strategy to maximize health potential for the Region's population?

* What can be done at the Regional level, with available resources, to assure the ample provision of safe, meaningful and justly remunerated work? How can this be done while taking into account factors such as the changes in the population (ie. the aging baby-boomers), the Region's multicultural reality, and the present structure of the Regional economy? How do we define, and who decides on the trade-offs, between the generation of wealth and prosperity and the maintenance and promotion of maximal community health and well-being?

* How will we define, and go about collecting, analyzing and reporting, more comprehensive measures of the community's health? How will this information be used to assess how well we are doing in producing health with the resources we control within the Region?

* How can the Hamilton-Wentworth community participate in the devolvement of responsibility for health care and health planning from the provincial to the local level? The Premier's Health Council recently released reports that set targets of one third consumer representation on Boards. How can Hamilton-Wentworth respond to this? Will this assure more democratic input into decision-making about health policy. What do we hope to achieve with greater public input?

* What is the best forum for local debate on health issues? How do we assure that the health care system moves in the directions of greater efficiency and equity, such that we improve on the amount of "health" we get from our expenditures on health care? How can accountability of health professionals

and policy makers to the community be best ensured?

* How do local bodies involved in health (District Health Councils, Public Health Departments, other Regional Departments, Faculty of Health at McMaster University, etc.) address health as a holistic concept? How should they?

* What will we do about tobacco use and alcohol abuse, two of the principal community health risks facing the Region?

* What is the most appropriate role for volunteers within the current health care system and in the context of a more community based system? What are the advantages and drawbacks of volunteerism (eg. reliance on volunteers to provide essential services such as food through food banks, or using a child to interpret complicated health issues to a parent who does not speak English)?

4.2 Larger Health Policy Issues Facing Hamilton-Wentworth

* How do we reallocate funds from the health care to other social/economic sectors which we know can have a major impact on health: social assistance, day care, housing, environmental protection, public transit, education and labour market adjustment?

* If the emphasis of health policy shifts to more community based solutions and to a more holistic concept of health, how can such policies be implemented? What are the likely positive and negative effects? What institutional, organizational and other regional/local changes are required?

* How can we ensure that health expenditures follow policy? For example, the Province's policy of deinstitutionalization over the past several decades has presumed that persons with chronic psychiatric illness will live, work and receive treatment in the community. However, although hospital beds have been reduced significantly, funding for community services has not increased in proportion to need.

* The use of technology in medical practice raises many questions. High technology interventions may produce dramatic results, but often have serious side effects, high risks and high costs. "Reproductive health" provides an example of an arguably over medicalized science. Many dollars are spent on technology to medicalize pregnancy and childbirth. Instead, using this funding to support low income parents and provide information on nutrition and family planning may have more profound benefits for community and population health. What are some of the implications and tradeoffs (funding, ethical, financial distribution, etc.) associated with this increased use of high technology interventions? How might one's understanding of health affect the high technology debate?

APPENDIX A

HEALTH CONCEPT	EXISTING REGIONAL ROLE
Health Care	An appendix of the Regional Official Plan (no official status) states Regional Council's position with respect to health care. For example, it is the policy of Regional Council that funding for health care facilities is a Provincial responsibility; that new health facilities are accessibly located and part of an integrated plan; that the Province should consult Regional Council before undertaking major changes to health care facilities, etc. The appendix provides no detail as to how these policies will be accomplished or how the success of the policies will be measured.
Disease	The Public Health Department delivers programs and services aimed at reducing morbidity through control of communicable diseases. Data collection and monitoring, case management, health promotion and disease control services are directed at preventing and controlling sexually transmitted diseases, vaccine preventable diseases, tuberculosis, outbreaks of communicable diseases, and outbreaks of infection in institutions. Food safety, water quality and rabies control are also addressed by the public health department within the context of disease prevention.
Genetic Endowment	
Health and Function	In providing people with "the opportunity to attain an optimal level of physical, mental, emotional and social development appropriate to their life stage", the public health department's mandate goes beyond the narrow medical definition of health as the absence of disease and recognizes that the individual's sense of health and functional capacity should be a relevant component of health policy. Programs aimed at specific demographic groups teach and promote coping skills and other issues affecting healthy growth and development. Examples include bereavement counselling and stress management for the elderly, communication skills and relations with peers and families for adolescents, preventative health care for all lifecycle groups, and sexual awareness, pregnancy planning and childbirth planning for adolescents and adults. Many activities of the Social Services Department appear to be directed to peoples' sense of health and functional capacity. For example, nutrition and/or therapeutic support are components of: many services for the elderly (eg. Homes for the Elderly, Meals on Wheels, etc); programs offered by outside agencies provided with Social Service grants or counselling contracts (eg. John Howard Society, Wesley Urban Ministry's Drop in Centre, etc); day care for families in need of therapeutic services; Red Hill Family Centre activities; subsidized homemakers and nurses services; and, home management services for high risk families.

HEALTH CONCEPT	EXISTING REGIONAL ROLE
Individual Response (Behaviour, Biology and Lifestyle)	In pursuing the goal of having people "adopt and maintain health promoting practices for themselves, their families and the community", the public health department provides programs on tobacco use prevention, substance abuse prevention, nutrition promotion and physical activity promotion. These programs involve liaison with community groups, school curriculum development, promotion of community and workplace policies, and provision of information to the public and to targeted individuals.
Physical Environment	The public health department's goal of protecting people "from adverse health consequences of exposure to toxic, hazardous substances and conditions in homes, public places and the work place" is followed up by 1) investigating non-communicable disease occurrences when exposure is higher than expected or when disease is associated with environmental exposure; and 2) maintaining a plan for responding to environmental emergencies. The Medical Officer of Health is empowered under the federal Workplace Hazardous Materials Information System legislation to require all employers to provide lists of hazardous materials at worksites. Responsibility for plans to prevent, and to respond to, environmental emergencies is shared with other Regional and Area Municipal Departments. For example, separation of land uses through the ROP can limit the impact of spills by heavy industry on the population. The Health Department also tests wells for bacterial infection and chemical contamination, examines septic systems, and reviews development applications to ensure that sanitary system construction does not endanger groundwater or streams. With respect to air quality, the Medical Officer of Health, in consultation with the Ministries of Health and Environment, can order owners to shut down or reduce operations where air pollution threatens public health and may investigate complaints regarding air quality or noxious odours outdoors. There are many areas of environmental significance in the Region which the ROP endeavours to identify and protect. The ROP deals with Lakeshore Policy Areas, Forests and Woodlots, Hazard Lands, and Environmentally Sensitive Areas. There are also policies to support the maintenance and quality of ground water, stream flow, head water and feeder areas for streams and rivers. However, the effectiveness of ROP policies in addressing environmental issues has not been adequately monitored. The environmental impacts of growth are effected by the extent and type of development which occurs. The ROP designates land for future development. Although there is land designated to accommodate 10-15 years of expected growth in

most Municipalities, there remains pressure for conversion of land in the rural-urban fringe, and for severances in rural areas. The Regional Housing Statement establishes targets for housing mix required to accommodate future growth, although previous targets have not been achieved. Area Municipalities establish many of the standards which effect the type of housing built.

The Engineering Department is responsible for the provision andmaintenance of sanitary and storm sewers and water mains. It is also responsible for solid waste disposal and for the construction and operations of physical plants for water and sewage treatment and solid waste incineration. Environmental quality and human health are directly affected by the effectiveness of Engineering actions aimed at: waste reduction through programs such as the Blue Box and composting projects; controlling runoff through storm sewers; limiting hazardous discharges into sanitary sewers and landfill sites; and, water and sewer treatment. The Engineering Department is also responsible for transportation planning, with implications on patterns of vehicular use and community design.

In 1990 a State of the Environment Report was prepared to: increase awareness about the Region's environment, effects of human activity on it, and implications of environmental change; provide a resource for continuing public education & dialogue; and, identify areas in which we have inadequate knowledge.

The proposed Regional Environment Office would provide an interdisciplinary approach (involving Planning, Engineering, Health, Fire and other appropriate Regional bodies) to issues of the environment and human health, such as contaminated sites, emergency planning, monitoring of hazardous substances in the environment, etc. Further studies addressing environmental issues, such as the planned Watershed Plan, or a review of community design alternatives to reduce automobile use and encourage transit/pedestrians/bicycles have the potential to make a positive impact upon the health of Regional residents.

HEALTH CONCEPT	EXISTING REGIONAL ROLE
Social Environment, Prosperity and Well-Being	Many activities of the Social Services Department are aimed at increasing the prosperity and well being of households with little or no income. These include: disbursing General Welfare Allowance (GWA) to single parents and unemployed persons; providing employment related services to GWA recipients having difficulty securing employment and training; contracting to house individuals in need of hostels, lodging home units and affordable housing; subsidizing day care for parents who are working, looking for employment, or attending retraining, work activity or higher education programs; and, conducting social research and policy development, often in conjunction with community groups and Committees of Council. The Planning and Development Department prepared an Economic Strategy in 1986 which focused on attracting and keeping jobs, attracting and keeping people, developing small business, and expanding Hamilton-Wentworth's role as a regional centre. The Economic Development Department is responsible for implementing the strategy and for monitoring the Region's economic status. The Chairman's Task Force on Affordable Housing has developed a draft strategy that would increase the Region's involvement in ensuring an adequate and affordable supply of housing for all Regional residents, through actions such as: establishment of a revolving fund to assist non-profits in accessing land; provision of technical and facilitative support to smaller non-profits, especially those attempting innovative design and equity options and/or attempting to fill gaps in existing services; advocacy of increased Federal and Provincial commitment to affordable and assisted housing; and, encouraging a 'fair share' approach to affordable housing provision across Area Municipalities.

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